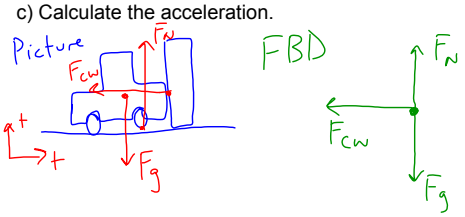
A car with a mass of 1500 kg collides with a wall with a force of -17850 N. net force

a) Draw a picture.

b) Draw a free-body diagram.

c) Calculate the acceleration.



ONLY acceleration in the x-direction

net force

$$\sum \bar{F} = m\bar{a}$$

$$\bar{F}_{cw} = m\bar{a}$$

$$\bar{a} = \frac{\bar{F}_{cw}}{m}$$

$$= \frac{-17850\,N}{1500\,N}$$

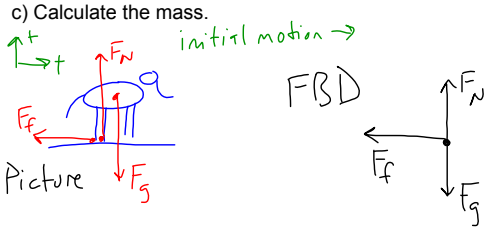
$$= -11.9\,m/s^2$$

An elephant stops with a force of -1800 N with an acceleration of -2.0m/s/s.

a) Draw a picture.

b) Draw a free-body diagram.

c) Calculate the mass.



No math in y-direction because there is no acceleration ($\bar{F}_g = \bar{F}_N$).

Math in x-direction:

$$\sum \bar{F} = m\bar{a}$$

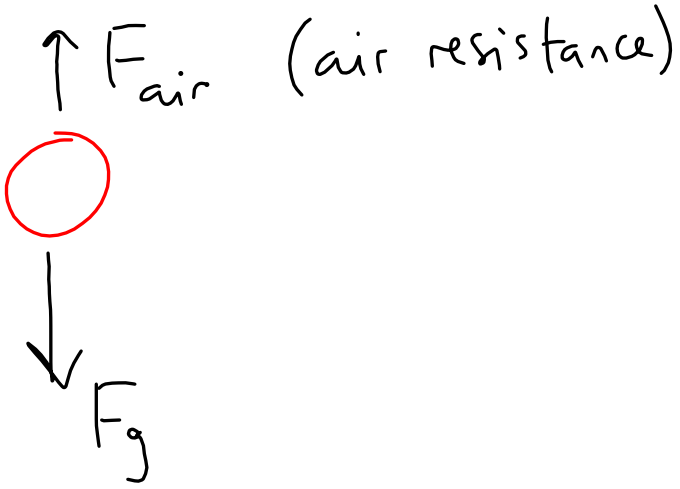
$$\bar{F}_f = m\bar{a}$$

$$m = \frac{\bar{F}_f}{\bar{a}}$$

$$= \frac{-1800\,N}{-2.0\,m/s^2}$$

$$= 900\,kg$$

A ball falling, with air resistance



When $F_{air} = F_g$, object falls at constant velocity (meaning it has no acceleration).

ONLY DRAW FORCES ON AN FBD (and picture)!